

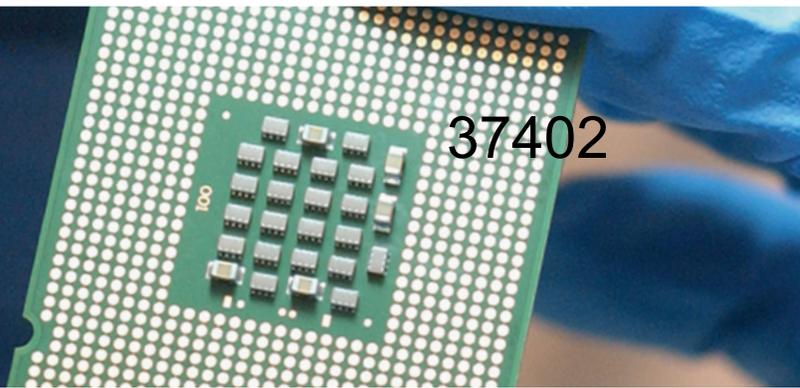
# The Impact of Intel in Costa Rica

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## Nine Years After the Decision to Invest



**World Bank Group**  
Multilateral Investment  
Guarantee Agency

INVESTING IN  
DEVELOPMENT SERIES

Multilateral Investment  
Guarantee Agency

2006

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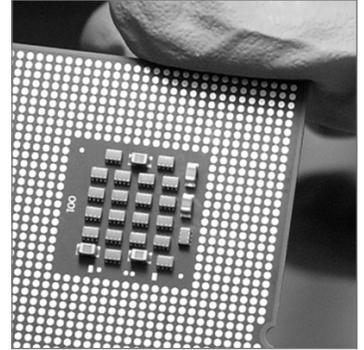
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The Multilateral Investment Guarantee Agency (MIGA) of the World Bank Group was established in 1988 to promote the flow of private foreign investment to developing member countries. MIGA offers political risk insurance coverage to eligible investors for qualified investments in developing member countries. MIGA also offers technical assistance programs to develop and implement effective strategies for attracting and retaining foreign direct investment. This hands-on technical assistance focuses on three primary areas: dissemination of information on investment opportunities and business operating conditions in developing member countries through online services; capacity building of the organizations and institutions involved in the promotion of foreign investment; and, investment facilitation activities supporting the efforts of developing countries to identify and attract investment.

Armando Heilbron, President of Infinitum, a consulting firm based in Costa Rica that specializes in foreign direct investment, conducted research and prepared the initial report that was the basis for this publication. During the time of Intel's initial investment in Costa Rica, Mr. Heilbron was CINDE's Investment Promotion Director for the United States.

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This report is intended to stimulate discussion and learning regarding investment promotion agencies and their practices. It is not meant to provide a complete or comprehensive case history, but rather to highlight elements relevant to investment promotion.

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# Introduction

Since Intel's decision to invest in Costa Rica in 1996, the case of the global electronics giant choosing the tiny country to locate its US\$300 million semiconductor assembly and test (A&T) plant has been widely recounted in the field of investment promotion. A seemingly unlikely match, it is now known that Costa Rica identified a close fit with Intel through meticulous research, and then demonstrated with precision how the country's investment climate would adapt to meet the project's requirements. This was accomplished with the active involvement of the highest levels of government in a short timeframe against an impressive list of competitive locations.

Yet how and why Intel selected Costa Rica is really only the beginning of a revealing case history of both lead players competing in a dynamic and difficult global environment. Nine years after the initial project was announced, hindsight affords a fresh perspective on Intel Costa Rica and its numerous impacts, many of which were unexpected. Beyond its obvious direct effects on the country's economy in terms of gross domestic product (GDP), foreign direct investment (FDI), and trade growth, Intel's investment decision was the catalyst for a realignment of Costa Rica's competitive platform as an investment location. Costa Rica worked resourcefully and with a novel sense of urgency to enhance the country's technical education, incentives law, regulation, and infrastructure. Over time the effects could be seen in an improved investment climate, a more focused, strategic approach to investment promotion, a developing technology cluster, and newly secured FDI projects in other targeted sectors. The Intel investment also reached far into the local community, affecting education and the country's knowledge base, workplace standards and business culture.

This report focuses on the post-investment years by tracing a series of impacts, directly and indirectly attributable to the introduction of Intel in Costa Rica. As the largest private project in Costa Rica on record, the Intel investment had a profound impact. Yet its example is as relevant in demonstrating Costa Rica's successful approach to securing an individual project and sustaining momentum in growing the electronics cluster and other FDI as in its scale.

This publication is organized in three main sections, along with several appendices. To provide context since Intel's announcement in late 1996, the first section briefly summarizes the project's evolution and Costa Rica's investment promotion strategy and approach following the investment. The second section focuses on the impacts themselves, which although largely interrelated, have been grouped as follows: those evidenced in Costa Rica's economy; investment climate; industry; and finally, in the development of Costa Rican society, such as in education. Finally, the third section presents conclusions, a commentary drawn from various perspectives and a look at challenges Costa Rica faces as it moves forward in its efforts to increase FDI. A synopsis of the 1998 paper on Intel's initial decision to invest, "Attracting High Technology Investment: Intel's Costa Rican Plant," published by the Foreign Investment Advisory Service (FIAS) of the International Finance Corporation/World Bank Group, appears as Appendix 2. *(A complete copy of the FIAS study can be ordered at <http://publications.worldbank.org/ecommerce>.)*



# I. After the Intel Investment

The 1996 announcement by Intel, the world's largest semiconductor company, that it would construct a new US\$300 million assembly and test plant in Costa Rica aroused considerable interest in the foreign investor community. With annual revenues of more than US\$20 billion, Intel's gross sales were approaching two times the GDP of tiny Costa Rica, which had a population of only 3.5 million. Intel's plan called for the establishment of a campus that could accommodate up to four plants employing 3,500 over time, eventually reaching an estimated US\$500 million in total investment. The Intel investment immediately set into motion a course of action at the highest levels of government and within CINDE<sup>1</sup>, the investment promotion agency, which would help define a new strategy and *modus operandi* in working with investors.

## THE PROJECT EVOLVES

The start of construction on an A&T plant in April 1997 marked the project's first major milestone, and validation that Intel was satisfied with Costa Rica's progress on outstanding issues related to the investment climate. Intel's initial US\$300 million, "greenfield" investment in Costa Rica established the 52-hectare campus for the testing and assembly of Intel's products. The project required an estimated 2,000 employees in two plants.<sup>2</sup> Over the course of the next several years, Intel built the second plant, and announced an expansion investment in order to introduce a new product platform. In 2003, six years after the first plant opened, Intel's volume of products assembled and tested in Costa Rica represented about 22 to 25% of the corporation's total sales. By 2005, when Intel invested US\$260 million in expansions to include a third building and new services in its "shared services" group, the Costa Rica campus reflected an accumulated investment of US\$770 million, employment for 2,900 workers and an additional 2,000 indirect jobs.

### Assembly and Test Operations

In October 2003, Intel announced it would invest approximately US\$110 million in a third A&T line for chipsets, adding 600 more employees over the course of two years. The operation in Costa Rica now constitutes about half of Intel's initially planned assembly and test configuration,<sup>3</sup> including two plants and a distribution center. The plants assemble and test three product platforms: server microprocessors, such as Intel® Xeon™ Processors; desktop central processing units (CPUs), such as Intel® Pentium® 4 Processors; and chipsets,<sup>4</sup> initiated in June 2004.

The third product line was engineered within an existing facility, and is identical in all dimensions to "sister" chipset A&T operations in Malaysia and China. Chipsets are considered a value-added, more advanced technology product. According to Bill Abraham, Intel Costa Rica's General Manager, assembling and testing chipsets "is very positive for Costa Rica, because it increases the strategic importance of

### Intel Costa Rica as a Free Zone Investor

The Intel Costa Rica campus was set up as its own free zone because it was too large to locate within one of the existing industrial parks. Costa Rica's Free Zone law was revised to include establishment outside of a Free Zone Park and a re-investment benefit. As a free zone investor, Intel received Costa Rica's standard investment incentives and tax policies, including:

- 100% exemption on import duties on raw materials, components and capital goods
- 100% exemption on taxes on profits for eight years, and 50% on the following four years
- 100% exemption on export taxes, local sales and excise taxes, and taxes on profit repatriation
- 100% exemption on municipal and capital taxes
- No restrictions on capital repatriation or foreign currency management
- Fully expedited on-site customs clearance
- Ability to sell to exporters within Costa Rica
- Ability to sell up to 40% in the local market with exemption from sales tax

Source: *FIAS Occasional Paper 11, 1998*

the plant in Costa Rica for the Intel Corporation.... We hope that Costa Rica continues making efforts to maintain and increase its competitiveness as support to this type of decision (to invest)."

Gulzar Mohd Ali, Intel VP and A&T General Manager, quoted in a 2003 press announcement, said that the additional investment "confirms the confidence that Intel Corporation has in the ability of the Intel Costa Rica team ...(and is) also a signal that the company wants to continue developing key products in Costa Rica."

Intel's site selection expert, Mike Edwards, explains that by Intel's standards, the Costa Rican campus is a young operation with a development plan influenced by two underlying trends in the industry: the staggering pace of shorter product cycles and higher technology "density," or improvements in products and processes that move the production line up the technology curve, particularly in terms of miniaturization, efficiency, speed and automation. Under these two parallel drivers, the size of the physical plant and the number of employees can remain about the same, even as investment increases. According to Edwards, 18-month product cycles force Intel to continually reconfigure lines and refresh equipment. As a result, new Intel A&T campuses can represent investments of up to US\$1 billion. Given favorable global markets and country conditions, a similar level of total investment in Costa Rica is considered possible.

### Service Operations and Ventures

In 2000, Intel Costa Rica also expanded into services with its Latin America Engineering Services (LAES) Group, incorporating over 100 engineers providing global engineering support in circuit design and validation, and about 40 engineers creating enabling code for microprocessors. The addition of a financial services group in 2004 marked a milestone in terms of providing services for the corporation out of Costa Rica. Intel Costa Rica recently added procurement and technical assistance to expand the services unit, now comprising five areas collectively referred to as the "shared services group."

In addition, Intel Capital for Latin America, a one-person venture located at Intel Costa Rica, is charged with finding and supporting technology companies that complement Intel. Intel Capital has invested in two software development companies located in Costa Rica.

### LEVERAGING THE OPPORTUNITY

Arguably, the most immediate strategic impact that Intel brought to Costa Rica was a significantly better country image for FDI. Intel had given an implicit seal of approval to Costa Rica's operating environment. The endorsement of one of the most respected and emulated corporations in the world – and an undisputed leader in technology – caused other prospective investors to take notice. CINDE, the country's official investment promotion agency, set out to leverage this interest into a broader strategy that would attract additional FDI and advance the country's competitiveness as a location.

## The “Signaling Effect”

The “signaling effect” is well recognized and appreciated by investing companies. Intel had conducted in-depth due diligence before choosing a new location, thus paving the way for other investors to follow the corporation’s lead. The news that Intel had decided in favor of Costa Rica made international headlines<sup>5</sup> and immediately put Costa Rica on the site maps of companies around the world in technology and other sectors. With the Intel announcement, the Costa Rican media began to focus coverage on foreign investment matters, featuring Intel, other specific investors and projects, and overall FDI and exports. The increased flow of information generated by the media helped establish the importance and benefits of FDI in a country like Costa Rica.<sup>6</sup>

**Spreading the word.** CINDE, Costa Rica’s Minister of Foreign Trade, José Rossi, and President José María Figueres were well aware of the power inherent in Intel’s signal, and immediately began leveraging the message. In a very short time, CINDE attracted the attention of top technology companies that previously had not been very receptive to the agency’s overtures. These prospective investors now exhibited more confidence about prospects in the country, accepting offers of country presentations and exploratory site visits, and making down payments for land. Intel cooperated with CINDE to become a “live testimonial,” meeting with potential investors as they worked through their decision-making processes. For example, both Abbott Laboratories (now Hospira) and Procter & Gamble (P&G) obtained validation from Intel and later decided to also establish operations in Costa Rica. (See Box 1: Government and Investor Support.)

### High-level integration between government agencies and CINDE

Since 1997, the Ministry of Foreign Trade (COMEX) has worked closely with CINDE for FDI attraction and with PROCOMER for export promotion. A sign of integration is the exchange of top executives between COMEX and CINDE. Minister of Foreign Trade José Rossi has been CINDE’s President for several years. Two-term President of CINDE, F. Tomás Dueñas, also has been the Minister of Foreign Trade.

### Box 1 Government and Investor Support

In the four years between 1997 and 2000, a strong working relationship was forged between foreign investors, CINDE and the government. A private-public sector team – the President, relevant ministers, top executives of established investors and CINDE – jointly promoted the country for investment. This cohesion was not only visible within the country, but also abroad. Established investors, such as Intel, Baxter, Conair, Sawtek, Bourns, and later Abbott Laboratories (now Hospira), Western Union, P&G and Sykes, publicly endorsed the country in road shows across the United States. The President’s involvement and live testimony from these companies conveyed a message of strong involvement and investor satisfaction. Intel actively participated in many promotional events as a “signature project (that was) working and successful,” according to Intel’s Edwards.

President Figueres, and later President Miguel Ángel Rodríguez, embraced the concept of outreach, personally participating as keynote speakers in one or more events CINDE organized abroad each year. In 1999 CINDE gathered top CEOs, including Craig Barrett of Intel, at a gala dinner to present the case for Costa Rica before potential investors in the Silicon Valley. In 1998, when President Figueres turned the power to incoming President Rodríguez, high-ranking executives from foreign companies were formally invited to the ceremony.

## Technology Cluster Focus

The attraction of FDI and an orientation toward high technology companies, particularly related to a cluster strategy, became national priorities for the remainder of the Figueres administration (1997-1998). Important links were forged between Harvard Business School, INCAE (the Costa Rican business school), CINDE and the government to determine the best way to fully leverage the unique opportunity presented by Intel to a new level of higher value added and FDI competitiveness. President Figueres and renowned business strategist Michael Porter, the pioneer of cluster development theory, met several times on the subject, and a promotional approach was designed with the help of several think tanks in Costa Rica and guidance from Porter.

An examination of Costa Rica's national development strategy and its focus on high technology was necessary for several reasons related to the overall economic picture. After a stagnant 1996, FDI and exports were seen as more critical to the health of the economy, especially when the domestic market was soft. The country was losing its advantage in apparel manufacturing, previously a leading export industry, and coffee and banana prices were tumbling in a free fall. During this period, the President of the Central Bank, Eduardo Lizano, identified FDI as a key catalyst for revitalizing the economy.

**Attracting "big fish."** CINDE's promotional efforts in 1996-1998 primarily focused on the electronics sector: establishing and consolidating Intel, developing the cluster by attracting more high-tech companies and strengthening the support industry around them. In this process, Intel VP Bob Perlman advised CINDE to pursue other "big fish" to the pond, following the example of Ireland, and offered introductions to key contacts that led to further investment. In 1998, CINDE focused on reinforcing the electronics cluster by bringing suppliers for the support industry, not only for Intel, but also for all large investors established in the country. The high-tech focus also prompted CINDE to open its foreign office in the Silicon Valley in 2000, although when funds decreased the agency was forced to close both its offshore offices in 2004.

## Supplier Development

In light of the government's interest in economic clusters in 1997-1998, Costa Rican officials, led by President Figueres, visited Singapore, Malaysia, the Philippines and Japan, and learned about the Local Industry Upgrade (LIU) programs in these countries. A local supplier base was seen as a means to increase economic impact through the multiplier effect, while also helping to anchor foreign investors through tighter and more proximate supplier relationships. In Costa Rica, Baxter Healthcare had been sponsoring a similar supplier program, inspired by the Singapore Economic Development Board's local industry program.

Costa Rica PROVEE, a revamped program to help develop local suppliers, was formally launched in 2000. This was the result of joint efforts by several organizations, including CINDE, the Chamber of Industry, PROCOMER (the Foreign Trade Corporation of Costa Rica), the Ministry of Science and Technology (MICIT), participating companies such as Baxter, and the Inter-American Development Bank, which funded 50% of the cost of the program with a non-refundable loan. Costa Rica PROVEE has achieved more than 40 viable linkages of local suppliers with multinational corporations (MNCs), and continues as a working program under PROCOMER.

## Sector Diversification

During 1997 and 1998, the slump in the electronics industry and Asia's financial crisis sparked a realization in Costa Rica that reliance on one fast-growing and promising sector could be risky in a volatile environment. Most of CINDE's top prospects for high technology projects evaporated, as did the possibility of landing another top MNC in electronics. Fortunately, CINDE had started moving in 1997 toward a more diversified investment promotion strategy after seeing indications of an impending crisis in 1996. This strategy targeted sectors that were showing steady, rather than explosive growth, including the medical devices industry and call centers. To date, this diversification has helped CINDE weather downturns in electronics investment and exports. CINDE has been able to attract important "anchor" investors in the counter-cyclical medical sector, including Abbott

### Box 2 Post-Investment Care and Policy Advocacy

The team that spearheaded the country's follow-through on commitments made to Intel during the conditional contract period evolved to become the government's Steering Committee for policy advocacy and implementation of necessary improvements in the investment climate. In addition to the Local Industry Upgrade program (initially called MIL, and later Costa Rica PROVEE), two important initiatives were directed at the increasing base of installed investors.

**High-Technology Multinational Companies Committee.** To help balance the needs of new and existing technology investors, CINDE and the government created a private-public sector committee to help channel feedback from existing investors. Led by President Figueres, the Committee met once a month in the Presidential House to discuss the needs for improvement in the operating environment. Established investors, such as Intel, Motorola, Baxter Healthcare and Conair presented their concerns. Commitments made at these meetings were immediately entered as tasks for the Steering Committee to execute.

**CINDE's Investment Executives and the Post-Establishment Coordinator.** As a result of the successful Intel experience and an increased portfolio of expansion projects – reinvestments came to represent half of total FDI flows – CINDE created the position of Post-Establishment Coordinator in 2000 to augment the efforts of its team of account executives. "A country and its IPA cannot just attract a foreign investor and leave it alone," Julio Acosta, CINDE's Managing Director at that time, said of the program. "They have to provide aftercare in order for investors to prosper and become spokespeople in favor of the country." The executives responsible for individual investor relationships, called Investment Executives, met regularly with established investors, taking note of their needs, and channeling their issues to the new coordinator in charge of aftercare services. This position was also responsible for policy advocacy, lobbying the government for the continuous improvement of the operating environment, helping to ensure investor satisfaction, collaboration with other investors, and reinvestments.

Laboratories (now Hospira) and Boston Scientific, while helping expand Baxter's existing operations. *(See also Box 2: Post-Investment Care and Policy Advocacy.)*

In its newly targeted sectors, CINDE set out to replicate the signaling effect spurred by Intel. The agency learned that like Intel, there were leading MNCs in other sectors that were watched for the signals their decisions sent to industry peers and the rest of the corporate world. CINDE's strategy further expanded to include mid-to-high-end services in its targeted sectors. Subsequently, the agency landed Western Union's technical support center, P&G's shared services back office, Sykes' call center for hire and Teradyne's refurbishing center, among others. It was P&G's decision that acted as the signal that helped boost development of the services sector in Costa Rica.

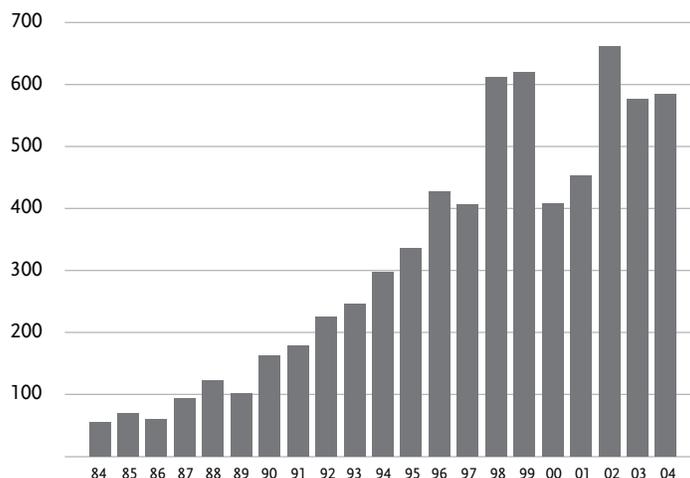
## II. Post-Investment Impacts

Before the decision to invest was made, Intel in Costa Rica was compared to “a whale in a swimming pool,”<sup>7</sup> a reference that speaks to both relative size, anticipated impact and likely ripples (or waves) across several dimensions of Costa Rica’s economy and society. For purposes of this discussion, Costa Rica was affected in four main areas: its economy, or more specifically, in its FDI inflows, GDP and trade; its investment climate; its industry; and among aspects of its development and society, such as education.

### MACROECONOMIC IMPACTS

Dubbed the “Intel effect,” the disproportionately large Intel project relative to the small Costa Rican economy almost immediately created distortions in the country’s macroeconomic indicators. These distortions became apparent soon after Intel began operating and exporting in 1998. Economists began to measure the economy with and without Intel, in order to understand the trends of the “other Costa Rica.” This sort of analysis later evolved to dual sets of macroeconomic statistics for Costa Rica, both with and without high technology multinational companies in general, including Intel.

**Figure 1**  
FDI Flows in Costa Rica, 1984-2004  
(US\$ millions)



Sources: Central Bank of Costa Rica, COMEX, PROCOMER, ICT, CINDE

**Table 1**  
FDI Growth  
in Costa Rica  
1995-2004

(US\$ millions)

1995	336.9
1996	426.9
1997	406.9
1998	611.7
1999	619.5
2000	408.6
2001	453.6
2002	661.9
2003	576.7
2004	585.0

Sources: Central Bank of Costa Rica, COMEX, PROCOMER, ICT, CINDE

**Table 2**  
**Costa Rica's GDP and**  
**GDP per Capita, 1995-2003**  
**(Market prices)**

	GDP (US\$ millions)	GDP per Capita (US\$)
1995	11,722	3,378
1996	11,843	3,322
1997	12,812	3,508
1998	14,096	3,762
1999	15,797	4,116
2000	15,946	4,062
2001	16,394	4,090
2002	16,818	4,112
2003	17,429	4,180

Source: Central Bank of  
Costa Rica

## Foreign Direct Investment

A rapid and dramatic impact was on foreign direct investment into Costa Rica. Intel investment inflows started in 1997 and skyrocketed in 1998 and 1999. (See Figure 1.) As Table 1 shows, in 1998 and 1999 Costa Rica received more than US\$600 million in new FDI, an increase of about 50% over the average in 1996-1997. Through 2004, Intel had invested more than US\$510 million, including its re-investment of US\$110 million in the A&T line for chipsets. This project helped to boost total FDI flows in 2004 to US\$585 million. The "Intel effect" on the country's FDI inflows has enabled Costa Rica to weather the economic downturn in the region much better than other countries in Latin America, falling just 7% compared to the regional average of 55% between 1999 and 2003.

## Gross Domestic Product

The country's gross domestic product has also been intrinsically tied to Intel. As shown in Table 2, GDP and GDP per capita surged in 1997 through 1999. In 1999, Costa Rica's GDP grew 8.4%, but excluding Intel's contribution, it would have grown only 3%. Thus, more than 60% of GDP growth in 1999 could be directly attributed to Intel. (See Table 3.)

However, Costa Rica's GDP also shared Intel's downturns. When Intel activity dropped significantly in 2000, the country's GDP growth was held to just 1.4%. Without Intel, GDP would have grown 3%. This experience led to the realization in Costa Rica that companies such as Intel were subject to severe cycles, and consequently, the country needed to diversify its investment projects in other companies, sectors and markets. In 2002 and 2003 Intel caused little or no distortion in GDP growth, basically moving with the rest of the economy.

**Table 3**  
**Growth of Selected Indicators (%)**

	1999		2000		2001	
	Total	w/o Intel	Total	w/o Intel	Total	w/o Intel
<b>GDP real</b>	8.4	3.0	1.4	3.0	4.6	4.1
<b>Exports</b>	20.6	3.3	-11.2	4.3	5.6	2.5
<b>Imports</b>	1.9	NA	1.4	3.8	5.0	5.5

Sources: Eiconanálisis; "What the Intel effect is all about," *Actualidad Económica*, 2001.

## Trade

Both imports and exports grew vigorously in 1997 and 1998, reflecting the high level of free zone activity. During those years, Intel's imports of plant equipment and high-value intermediate materials boosted overall growth in imports. Even before Intel started to operate in a free zone, exports were experiencing strong momentum, as shown in Figure 2 and Table 4.

**From “golden bean” to “golden chip.”** Free zone exports in 1996-1997 surpassed bananas and coffee, Costa Rica's traditional export leaders. In subsequent years, Intel started exporting at volumes previously unknown in Costa Rica. For example, during 1999, Intel exported about US\$2.4 billion in products, amounting to 36% of the country's total exports. Costa Rica's total exports reached US\$6.6 billion, an unsurpassed record to date. Free zone exports skyrocketed. Intel rapidly became the top exporting company, its chips became the top export, and electronic components became the top export category, leaving agricultural and agro-industrial products and apparel far behind. During 1998, modular circuits (electronics) surpassed the traditional top exports, such as bananas and coffee. Intel and other free zone exporters of non-traditional products helped reverse the drop in the country's terms of trade that had resulted from decreasing international prices for traditional products. Intel added new export markets, such as Taiwan and Singapore, and further developed export markets such as Mexico.

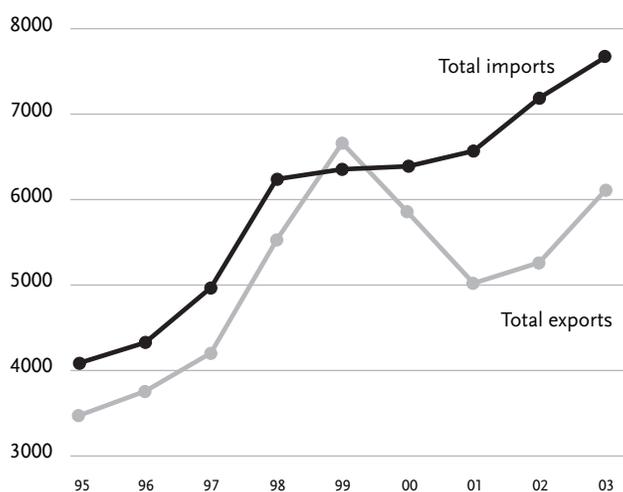
Costa Rica's economy has evolved from production of its “golden bean” (high-quality coffee) to the “golden chip.” To further illustrate this dramatic shift in the composition of Costa Rican exports: thirty years ago traditional coffee and bananas represented 80% of exports, and today, non-traditional exports represent 80%. In 1985, Costa Rican exports amounted to just over US\$1 billion, of which 60%

**Table 4**  
Annual Total Imports and Exports in Costa Rica (US\$ millions)

	Imports	Exports
1995	4,089	3,476
1996	4,327	3,758
1997	4,970	4,205
1998	6,239	5,526
1999	6,355	6,662
2000	6,389	5,850
2001	6,569	5,021
2002	7,188	5,263
2003	7,663	6,102

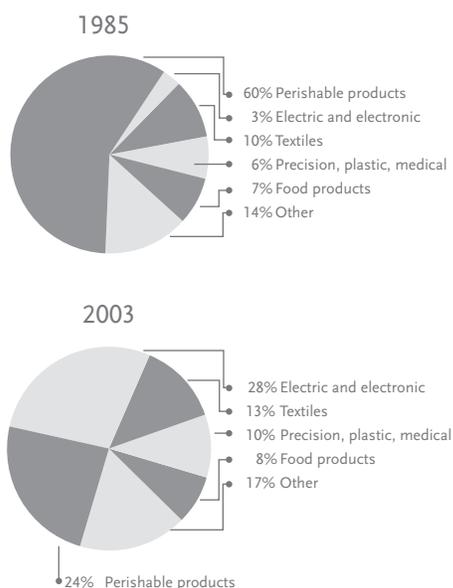
Source: Central Bank of Costa Rica, Customs, PROCOMER

**Figure 2**  
Annual Total Imports and Exports, 1995-2003 (US\$ millions)



Sources: Central Bank of Costa Rica, Customs, Export Promotion PROCOMER

**Figure 3**  
**Costa Rican Export**  
**Composition**



Sources: Central Bank of Costa Rica, CINDE

were perishable products. By 2003, exports had grown by almost five times, with a more diversified basket of products. Perishable products had fallen behind the new leader, electric and electronic products, representing 28% of the total. (See Figure 3.)

**Riding the Intel wave.** Beginning in February 1999, and for more than a year, Costa Rica recorded a trade surplus for the first time in 20 years. Costa Rica became the number one per capita exporter in Latin America. However, when international business conditions softened, Intel's exports fell to US\$600-800 million per year in 2000, 2001 and 2002. During this period, Intel's imports in one year exceeded its exports, increasing Costa Rica's trade deficit. This occurred during difficult international conditions, when exports were lagging and Intel Costa Rica was importing new, costly equipment to retool its facilities. In recent years, Intel exports have averaged US\$1-1.4 billion per year, representing 17 to 20% of total exports of the country.<sup>8</sup>

### Intel's Value Added

Over the years, Intel's value-added has been estimated in the range of US\$90-500 million per year, based on three different types of calculations: (1) as a percentage of the value of Intel's total exports; (2) as the difference between the value of Intel's exports and imports; and (3) as the amount Intel pays employees and local suppliers. As a percentage of exports, Intel's annual value added is estimated at 18 to 20%, or about US\$260 million in 2005 and nearly US\$500 million at its high point in 1999. Other calculations yield an "Intel surplus" of US\$200 million, the difference between US\$1.5 billion in exports and US\$1.3 billion in imports.<sup>9</sup> The US\$200 million difference could be inferred as real expenses incurred in Costa Rica, or Intel's "national income effect." Even in 2000, when exports dropped, this effect was estimated at the same level. On the low side, based on employee and supplier payments, the Intel value-added has been estimated at US\$90-200 million per year.

**Direct employment.** Intel Costa Rica now employs 2,900 direct workers, but between 1999 and 2004, it maintained an average of about 2,000. A rough estimate is that Intel paid US\$44 million in gross payroll in 2005, including base salary, social security contributions and workers' compensation insurance. These jobs are 50% better paid than traditional apparel or agro-industrial, and offer recent technical graduates a private-sector job alternative. Before the advent of Intel and the development of the electronics cluster in Costa Rica, electrical and electronic engineers and technicians essentially had one career option: to work for ICE, the state-owned power and telecommunications provider.

**Backward linkages and local purchases.** Intel estimates it generates another 2,000 indirect jobs through its purchases from domestic suppliers. While locally acquired direct materials are only 2% of the total value Intel exports, when a broader range of goods and services<sup>10</sup> is considered, supplier purchases are estimated at 10 to 12% of exports. Intel's local purchases for goods and services vary by year in the range of US\$50-150 million.<sup>11</sup>

**Belen community.** Intel is located in Belen County, Heredia, one of the most developed counties in Costa Rica, and seat of one of the country's wealthiest municipalities, Belen. Belen County alone generates 25% of the country's exports. About 50% of the county's hefty budget comes from patents and real estate taxes

paid by local industry. In 1999 Intel voluntarily began paying patent fees to the county government, despite the corporation's exempt status under the free zone regime. Intel's choice of locating in Belen has transformed the county into the "epi-center of Costa Rica's infrastructure corridor." In addition to Intel, Belen County hosts 87 corporate operations including well-known multinationals – Kraft Foods, Kimberly Clark, and Firestone – and forms part of three important cross-county clusters in electronics, medical devices and call centers.<sup>12</sup>

## THE INVESTMENT CLIMATE

Before the project in Costa Rica was announced, Intel's Perlman, VP of International Tax and Licensing, provided his assessment of the country's investment climate: "Costa Rica is a good product," he said. "It has several green lights, some yellow lights and no red lights." Intel, a sophisticated investor, considered the country's investment climate sufficient for the corporation to establish a new operation in Costa Rica. However, the announcement in November 1996 was conditional, a usual practice of Intel; the investment would materialize only if Costa Rica delivered on certain provisions between November 1996 and March 1997. Both CINDE and the government wanted to effectively land Intel, but they did not have much time to make the necessary improvements in the investment climate. They needed to organize the task at hand, execute in an unusually fast and resourceful manner, and work diligently to turn the yellow lights into green.<sup>13</sup> The results of their efforts to improve the investment climate – its infrastructure, incentives, business processes – would become a legacy available to all foreign and domestic investors in Costa Rica.<sup>14</sup>

### Improving the Investment Climate

The conditional contract with Intel stipulated specific improvements that prompted immediate government action, primarily in four main areas: technical education and workforce skills, infrastructure and support industry, permits and construction, and tax and incentives. The two examples of logistics and communications infrastructure and construction permits illustrate a few of the many facets of important investment climate factors that Costa Rica addressed. In particular, these efforts would help contribute toward the country's simpler, more transparent procedures and regulatory system. (*See Box 3: Enhancements in Costa Rica's Investment Climate.*)

**Logistics and communications infrastructure.** Intel's immediate impact on Costa Rica's logistics and communications infrastructure provided an impetus for further development and exponential growth in these industries. In the seven years between 1996 and 2003, communications and logistics spending in Costa Rica nearly doubled, achieving an average annual compound rate of growth of about 10%. In 1998, the government passed the Public Concessions Law allowing private investors, national and foreign, to participate in the construction and operation of public works, such as roads and ports. The upgraded, world-class airport for passengers and cargo, while still under construction and remodeling, has improved facilities and logistics for passengers and cargo, with higher frequency of flights and the local establishment of leading international service providers, such as FedEx, UPS, DHL, Danzas and AIG. Faster airport customs procedures, using the Internet, were also established to allow for a 24-hour maximum lead-time.

Costa Rica also improved the quality of the country's power infrastructure, as a result of the installation of new equipment and techniques shared by Intel with power supplier ICE. A private-public partnership between Intel and ICE was created to jointly manage and supervise the new Belen substation, which was built by ICE with Intel financing on Intel's land. In addition, a discounted, "high tension" rate was created for high consumption users of hydroelectric power.

**Permits and construction.** A streamlined permitting process allowing for parallel permitting and construction was necessary to accommodate Intel's requirements for the project's construction. At first, both the government and private construction companies thought it was impossible to build Intel's facility to the requested specifications and timing. Such a project typically required two years to build. However, working together with Intel, the construction team learned new world-class methods to design while building in order to complete the project in 11 months. The project was so large and its timeframe so short that fierce competitors in Costa Rica's construction sector were forced to operate in an entirely new way. Joining forces, several companies worked as a team under a general contractor. When the project was complete, Costa Rica had delivered on time with a record-breaking rate of no accidents at the construction site. The acquired know-how for faster, better and more secure construction became the "good construction practices" model, now applied to other projects in Costa Rica.

The fast-track permitting process designed for Intel segued into more comprehensive national legislation simplifying the procedures for establishing a business in Costa Rica. Environmental regulatory procedures were also streamlined.

### **Changing the Government's Priorities**

Intel served as an important impetus for changes in the way government worked with investors. It was the first time in Costa Rica that a president assumed a proactive role in FDI promotion and personal involvement with investors. President Figueres attended progress/update meetings related to the establishment of Intel. The president's focus on FDI, and leadership in serving the needs of investors, set the tone of a high-level national priority throughout the government and public institutions, and fostered a new sense of urgency in government officials.

**Service orientation.** The period from 1997 to 1999 was an optimistic time in Costa Rica's history. In meeting commitments made to Intel, Costa Ricans exhibited a growing confidence that their small country could compete for FDI on a worldwide basis, applying world-class methods inspired by MNCs, such as Intel and Baxter. The President's determination and vision helped inspire a new "can-do" attitude and service mentality among employees of government and autonomous public entities, such as the University of Costa Rica (UCR), the Technological Institute of Costa Rica (ITCR), the National Training Institute (INA) and the power and telecommunications authority, ICE.

This responsiveness to investors is evidenced in the results of a range of climate-building initiatives. Overall, all commitments made to Intel were delivered on time. The universities made important changes to their curricula and introduced new courses based on Intel's recommendations. The overpass to give Intel a direct access to the highway took only three months from concept to finish. ICE initiated the assignment of investor accounts to designated executives, service level agreements and service-quality improvement training. Airport customs personnel

### **Box 3**

## **Enhancements in Costa Rica's Investment Climate**

In response to Intel's initial requirements for the project, enhancements in Costa Rica's investment climate were implemented in four main areas. The following list details those initial enhancements, many of which were designed to create nearly immediate results. Improvements in the investment climate were available to all companies, foreign and domestic, thus becoming a legacy of Intel's investment.

#### **Labor Force and Skills**

- Higher number of technical graduates;
- Creation of a 1-year certificate program and a 1-year associate degree focused on semiconductor manufacturing and microelectronics at the Technical Institute of Costa Rica (ITCR);
- Higher quality of technical curricula in advanced microelectronics;
- Language training programs at ITCR;
- Higher level of skills in construction and project management by local contractors.

#### **Tax and Incentives**

- Revised Free Zone law, including how to establish Free Zone operations outside of an established Free Zone park and the addition of a re-investment benefit;
- Exemption, and eventual elimination, of the 1% capital tax for all companies, as it countered the new promotion of higher technology, which requires larger capital investments.

#### **Permits and Construction**

- Permits fast track, which later gave way to an important initiative geared to simplifying the process for establishing a business in the country;
- Parallel construction permit and deployment, not only to speed the entire process but also to provide flexibility to adapt during the construction process. The acquired know-how for faster, better and more secure construction became the "good construction practices" model, since applied to other projects in the country.

#### **Infrastructure and Support Industry**

- Impulse and approval of the Public Concessions Law, to allow for private investors, national and foreign, to participate in the construction and operation of public works, such as roads, ports, etc.;
- World-class airport for passengers and cargo. While it is still under construction and not all boarding areas are remodeled, travelers have already benefited from better facilities in check-in, immigration and baggage claim areas;
- Improved logistics for passenger and cargo, with higher frequency of flights and the local establishment of world leaders such as FedEx, UPS, DHL, Danzas, AIG;
- Faster airport customs clearance via Internet to allow for a 24-hr. maximum trip;
- Higher quality power, even during thunderstorms, due to power quality equipment and techniques taught by Intel executives to employees of power supplier ICE;
- Private-government partnerships to jointly build and manage a facility, such as the case of the Belen substation built by ICE on Intel's land, with Intel financing and joint supervision;
- High-tension energy rate of about \$0.05/kWh;
- More developed support industry: not only did CINDE dedicate one year to help global Intel suppliers learn about the country and establish easily in Costa Rica, but also local firms upgraded to supply world-class companies such as Intel.

developed a faster clearance process, using the Internet. This established a new, higher standard of service for the benefit of all free zone companies.

### The Construction Industry

Intel had an immediate effect on the construction industry, stimulating the industry's recovery during 1997 and 1998. In 1997 alone, Intel represented about 37% of all constructed industrial area.<sup>15</sup> By 1998 annual construction increased on a real basis 25% from 1996 levels. By 2003, annual construction in real terms was 50% higher than the 1996 levels seven years earlier.<sup>16</sup>

## COSTA RICAN INDUSTRY

Intel's investment also sparked growth in specific sectors of Costa Rican industry, beginning with the immediate boost the project delivered in construction contracts. A longer-term and more indirect impact, the result of Intel's "signaling" effect, was the increased willingness of other foreign companies in diverse sectors to consider Costa Rica as a site for operations. The electronics cluster flourished with new foreign and domestic projects, including suppliers to Intel, as well as expansions of existing pre-Intel investments. Increased investor interest also led to growth in the medical devices cluster, and to pioneering investments in services, which Intel later reinforced with service project expansions in engineering services (LAES), and more recently, in financial services, procurement and technical assistance. By 2004, the local support industry supplying Intel included 460 firms for both materials and services.

### The Electronics Cluster

With the arrival of Intel, Costa Rica bolstered its then incipient electronics cluster. Today this cluster is the largest among export sectors, incorporating more than 55 companies, of which 42 are foreign. The cluster employs about 12,000 workers and exports more than US\$1.65 billion in products a year. The largest segment is microprocessors, which Intel leads. Microwave telecommunication components follows, including companies such as Sawtek, Remec, and Merrimac, which started in Costa Rica in 1996 before the Intel investment and grew exponentially afterward. Teradyne, a semiconductor testing equipment manufacturer, also established a sophisticated printed circuit board repair operation after Intel established.

Despite CINDE's well-orchestrated efforts, no other global leader in the high technology field set up in the Costa Rican electronics cluster after Intel. Several top technology companies – Hewlett-Packard, IBM, Seagate, Western Digital and Dallas Semiconductors – seriously considered Costa Rica for their projects, but none were established, likely due in large measure to the global economic downturn in 1997 and 1998 that created excess manufacturing and assembly capacity worldwide. The cluster also took a hit when Motorola and DSC/Alcatel closed their Costa Rican telecommunications components operations, in light of diminishing global demand. To date, Intel continues to be the predominant player in this cluster, representing most of the cluster's exports. Sawtek and Remec, #2 and #3, respectively, are far outdistanced by Intel.

### The Support Industry

**Global suppliers.** A direct consequence of Intel's investment was the establishment of satellite offices for a number of global suppliers<sup>17</sup> beginning in 1998, providing building blocks for the budding electronics support industry. Most of these firms, under contract to provide easily accessible technical support for manufacturing and testing equipment sold to Intel, opened a small service center or located an engineer at the Intel facility. A few component suppliers located a representative in

Costa Rica to work directly with Intel. CINDE dedicated one year to helping these global suppliers learn about the country and establish easily in Costa Rica. Since then, CINDE has continued to work closely with established foreign investors and suppliers to create stronger links, find new clients within the country, and encourage new firms to locate in Costa Rica. (See Box 4: *Supplier Development – A Different Type of Investment Attraction.*)

**Local firms.** Not only were new supply outlets attracted by the Intel investment, but also local firms upgraded their operations to supply the world-class companies in the electronics cluster. Several Costa Rican companies won contracts with foreign investors, including Intel. Intel worked with local companies to help raise their quality and cost competitiveness in order to meet global standards, for example, in cardboard packaging. In this regard, Intel both helped to increase the local content of its exports and contributed toward a higher-performing supplier base. Intel developed this local supplier network despite the fact that it was able to import inputs without duty, tax or restriction under Costa Rica’s free zone incentive regime.

#### **Box 4 Supplier Development – A Different Type of Investment Attraction**

Unlike large exporters such as Intel, suppliers of intermediate goods choose their locations based on the size of the local market for their products and services. This sets up a different dynamic in attracting these investors into a growing cluster, as in Costa Rica, than for export-oriented manufacturers.

CINDE’s efforts in developing a supplier network have helped to anchor investors in the electronics cluster and other growing sectors. In developing suppliers, the agency was faced with a typical “chicken or egg” challenge: investors liked to see suppliers already in place before deciding to invest, but suppliers needed to see a market of potential buyers before making the decision to locate. For instance, CINDE discovered that manufacturers (suppliers) of semiconductor equipment needed to have at least three potential buyers to warrant setting up a local facility. In addition, the industry’s hyper-dynamic pace meant that plants were continually refurbished and subject to relocation, so equipment suppliers viewed any local market as in constant flux.

In tackling the challenge, CINDE learned to work through Costa Rica’s existing investors to “back link” suppliers to them. This “bottom up” approach required determining which suppliers were already working with established investors in Costa Rica and might better serve these investors through local facilities. The agency soon discovered commonalities between existing investors across different sectors. For instance, both electronics and medical devices companies contracted with some of the same suppliers for clean rooms, plastics, cardboard packaging, metal mechanics, and other services. After identifying the sector-specific decision-makers within the supplier companies, the CINDE team worked both sector angles of the same prospect. In this way, CINDE was able to cultivate suppliers that supported growth in both the electronics and medical devices clusters in Costa Rica.

## The Creation of CENAT

Another related development, although not directly a result of the Intel investment, was the creation of the National Center for High Technology (CENAT) in December 1997. Following the model of Singapore, Malaysia, Taiwan and Japan, CENAT was a Presidential initiative to link advanced science and companies in the areas of IT, materials science and technologies, such as nanotechnology, biotechnology and advanced manufacturing. CENAT functions under the responsibility of the highest academic authorities in the country, the National Council of University Deans. A CENAT program in development with the ITCR relates to nanotechnology.

There are currently 13 local suppliers to foreign firms, including Intel, in the electronics cluster, mostly in the areas of metalwork, plastic injection molding, and engineering services. A broader local supply network of about 460 firms serves Intel with a range of other products and core services. Services account for 76% of Intel's local purchases. Products and services purchased locally include: packaging materials, logistics, maintenance of clean-rooms, equipment and facilities, information technology (IT) services, gardening, security, health services, catering, and so forth.

## DEVELOPMENTAL AND SOCIAL IMPACTS

The presence of Intel also had an impact on Costa Rica's business culture and the community in general. A highly visible and prominent employer, Intel was also an active contributor to the community and a socially responsible corporate citizen,<sup>18</sup> especially with regard to social programs and environmental awareness. Intel's efforts have had an influence on other companies in Costa Rica in establishing more socially responsible practices, another sort of multiplier effect.

### Reinforcing the Education Infrastructure

**Technical education.** Intel initially required improvements in technical education as part of its conditional agreement. The resulting flurry of enhancements set the tone and framework for Intel's continuing close cooperation with Costa Rica's universities and technical schools. During the period of Intel's establishment in Costa Rica, Eduardo Sibaja, Minister of Science and Technology, commented that Intel had given a "very important push" to technical education in Costa Rica, helping to strengthen the country's overall foundation in this area. Specifically, Intel's impact is tangibly reflected in a series of programs and relationships designed to increase both the number of graduates and their proficiency. These programs and relationships include:

- Programs and enhanced curricula at the three major educational institutions, ITCR, UCR and INA, especially during 1999-2003;
- English reinforcement program at ITCR;
- The establishment of a one-year certificate program and a one-year associate degree at ITCR focused on new technical fields such as semiconductor manufacturing and microelectronics, and later, materials science;
- Links with UCR's School of Physics and technological and vocational schools for electronics;
- Support for the electrical, electronics, computing and industrial engineering fields.

**Hands-on learning.** Intel has also led and supported a broad range of programs for teachers and students in Costa Rica’s elementary and secondary schools. Examples include:

- The “Intel – Innovation in Education” program, which has donated micro-processors valued at over US\$1.1 million to modernize the laboratories in schools.
- Computing teaching programs.
- “Intel – Educate for the Future” program, with a goal to train 9,000 primary and middle school teachers in the technological area.
- The “Students as Scientists” program that promotes scientific research in schools. Launched in coordination with the Ministries of Public Education and Science and Technology and their National Program of Science and Technology Fairs, this program aims to train 2,000 high school teachers to raise students’ interest in sciences. The estimated cost to Intel is about US\$70,000.

## Sharing Knowledge, Business Culture and Standards

**Global standards.** As an international business model, Intel also has helped to transfer its core values and culture of global competitiveness. Intel emphasized long-term planning, discipline, results, innovation and ethics through specific programs, such as “Sharing the Values and Culture of Intel” and “Young Entrepreneurs.” Intel invested heavily in the continual training of its employees, sending them to operations abroad for lengthy skill-building periods. Exposure to Intel’s competitive environment, knowledge and world-class practices helped raise the performance standards of its workforce and suppliers, and enlightened the institutions that interfaced with Intel during the project’s establishment.<sup>19</sup> A research study<sup>20</sup> concluded “a significant percentage of Intel suppliers ... received training from Intel or ... have changed their organizational practices or even have introduced changes in their product variety due to Intel... Intel had a positive effect on (the suppliers’) operations.” Though difficult to measure, Intel’s transfer of business values and culture is seen as contributing to increased productivity and competitiveness in Costa Rica, as better qualified workers and suppliers extend their practices and knowledge base across the economy.

**High technology “halo effect.”** As suggested in several examples, Intel spurred positive developments in Costa Rica’s technology sector through direct actions, such as the addition of LAES, the engineering group offering more sophisticated services, and through spillover benefits, e.g., ICE’s pilot project in 2000 to offer advanced Internet services.<sup>21</sup> Roberto Artavia, Dean of INCAE, believes Intel had a positive “halo effect” in encouraging entrepreneurs oriented towards technology and innovation. These entrepreneurs, in turn, created a technology park for software developers and a training center for programmers. Perhaps these initiatives would have eventually materialized, but Intel’s presence accelerated the process.

**Worker safety and health.** Intel was a pioneer for Costa Rica in the area of worker safety and health. Following Intel’s best practices, the National Insurance Institute (INS) – the workers’ compensation insurance entity and general insurance supplier in Costa Rica – created the first national Job Safety and Health Standard. Intel became the benchmark for other companies looking for guidance, and the

## Saving the Environment

Intel has been proactive in helping to preserve the natural environment. In Costa Rica, it created the group, “Industrial Friends to the Environment,” and several environmental awareness programs. Intel supported community environmental projects, recycling programs in the community and schools, and launched the project, “Save Our Planet.” For example, 21 Intel volunteers joined Belen school students to celebrate Earth Day and reflect on the importance of even small efforts to improve the environment, and also advised teachers from several county educational centers on recycling efforts.

“showroom” for them to learn and improve their industrial safety and health standards and practices. Importantly, Intel required its suppliers and subcontractors to meet strict worker safety qualifications. For five consecutive years, Intel was honored with the INS award, “Preventico,” in recognition of its proactive efforts to prevent accidents.

## III. Conclusions

Intel's investment and presence have had an overwhelmingly positive impact on Costa Rica, generating both direct and multiplier effects on the country's economy, industry, educational institutions and business culture. Intel's requirements served as an important motive for the country to immediately upgrade its infrastructure and enhance the investment climate to the benefit of all investors. The process of attracting Intel to Costa Rica helped shape the country's investment promotion strategy and contributed to the development of its IPA and the way investment promotion was conducted. Fundamentally new relationships were forged between the government, CINDE and investors, a cohesion that helped Costa Rica to land more investment and furthered improvements in the investment climate. Intel sent a strong signal to other investors that put Costa Rica on the global map, and served as an important ally in investment promotion. Finally, but not least, Intel demonstrated its leadership in areas of social responsibility. Much of the impact made by the investment came to the country as unexpected benefits.

### SIZING UP THE IMPACT

The numbers behind Intel's investment in Costa Rica portray the magnitude and direction of the project. The Intel A&T campus in Costa Rica was initially planned to encompass four A&T plants and 3,500 employees, eventually reaching US\$500 million in investment. At its current accumulated investment of US\$770 million, the project has well surpassed the planned total investment, reflecting more than double the initial investment of US\$300 million. However, the project's two plants and 2,900 employees (including those in the additional shared services unit) are still considered about half the size of a fully mature A&T operation. This sizing is due primarily to the general deceleration of growth in the IT industry, and to a lesser degree, to higher "technology density" and productivity that enable smaller facilities to produce more with fewer workers. In any case, Intel's Edwards has said "Costa Rica is still a young facility" with the potential to reach US\$1 billion in accumulated investment should conditions permit.

In terms of economic impact, the numbers again speak for themselves. In recent years, Costa Rica has significantly outperformed all other countries in Latin America in FDI. Its 2004 inflows were US\$585 million, corresponding to 3.2% of the country's GDP. The period following the investment shows significant GDP growth, staggering increases in exports, and otherwise generally positive outcomes, although Intel's size and volumes exaggerated the depth of Costa Rica's economic downturns. Intel is responsible for a shift in the country's top exports, from coffee and bananas to electric and electronic products. Electronics is now Costa Rica's largest sector with Intel as the largest player. The industry employs 12,000 and exports US\$1.65 billion in products a year. The local support industry for Intel alone reflects a base of 460 suppliers and US\$50-150 million in local purchases of goods and services per year.

## Unexpected Benefits

In general, those with a firsthand knowledge of the project agree that Costa Rica fulfilled Intel's original expectations, and that Intel exceeded the expectations of the country, the government and CINDE:

**Intel.** Intel has experienced both the benefits and the drawbacks of investing in a small country like Costa Rica. The personal attention the corporation received from the Figueres administration and CINDE's staff made it relatively easy to establish and make the project a success. However, a small market may have hindered Intel's efforts to find local suppliers and sufficient technical human resources, such as employees with advanced degrees in engineering and computing. Intel executives are generally circumspect on the aspect of relative size, as it also means increased visibility for the corporation and its issues.

The corporation also discovered several unexpected benefits in Costa Rica, including:

- A higher level of engineering and software development capacity than expected, which permitted expansion beyond assembly and test into sophisticated services;
- A high level of managerial maturity, enabling Intel to replace all expatriates in less than two years, rather than in up to three years, the expected timeframe for this process;
- Higher levels of local purchases in goods and services than expected, although these levels have varied by year.

**Costa Rica.** Intel's investment and FDI in general have been advantageous for Costa Rica and its people, generating economic growth, higher paying jobs, exports and market diversification. As a competitor for FDI, the country can credit Intel with improvement of Costa Rica's image, development of human resources, further insertion of the country in the global economy, and awareness of the country's investment conditions and competitiveness. Intel pushed the country, creating positive pressure to improve, and Costa Rica delivered.

For Costa Rica, Intel's impact exceeded expectations, with potentially more to come. Importantly, Costa Rica has been positively surprised by Intel's expansion into five shared services (circuit design and validation, software development, financial services, procurement and technical assistance) as well as venture capital investment, portfolio monitoring and research. Each of these service investments represents additional paths to development that Intel can support.

## Hindsight on Development of the Electronics Cluster

Intel continues to be a largely unique investment in Costa Rica. In an ideal case, large technology manufacturers would have followed Intel into Costa Rica, as was the case in Ireland, and now in the Chinese province of Sichuan. (*See Appendix 4: Intel in Sichuan Province, China.*) Additional high-profile projects might have contributed to the critical mass to foster a larger local support industry and electronics cluster. Although Intel has attracted a large base of suppliers of services, this is less true for inputs. Some economists in Costa Rica maintain that Intel operates as an enclave in Costa Rica with limited linkages to the rest of the economy, importing

most components for its assembly and generating a low economic multiplier effect. Typical of maquila-type operations, this sort of situation is sometimes considered resilient in isolating the local economy from external conditions, especially during high volatility.

In retrospect, it is clear that external conditions initially foreclosed opportunities that CINDE had developed to land other "flagship" projects. In fact, many firms seriously looked at the country, and even made commitments to invest, but later reconsidered. Since then, it can be argued that Intel and other high technology investors may require a more developed support industry of international and local vendors to enhance their supply chains and promulgate a full clustering effect. Good examples of this sort of cluster are found in Shanghai, Malaysia, Singapore and Ireland. Although it is clear that Intel was able to develop a supportive local supplier base including a number of globally competitive suppliers after its initial investment, investors may now expect the country to proactively foster growth in investor-supplier networks. Typically, governments help to spur cluster growth by facilitating key linkages, and by extending fiscal and regulatory relief to suppliers, such as those offered through free zone schemes.

## CHALLENGES AND NEXT STEPS

### Competitive Dynamics

As Costa Rica moves forward, its potential to attract and anchor FDI likely will be shaped by a mutually reinforcing dynamic: an increasingly competitive environment for FDI among world locations heightened by fierce competitive pressures for MNCs to lower their costs. Separately, there is a dramatic consolidation of operations in South East Asia and China, due to the rapid growth of those markets, costs that are half of those in the Americas, and better logistics. All these conditions are creating a self-feeding "ecosystem" for technology manufacturing there, which makes it more difficult for countries like Costa Rica to divert investment flows and land them in their territories. Competition with these markets is a constant struggle, through cost reduction, competitiveness and positioning. The fact that Intel is constructing new A&T plants in China's Sichuan province would seem to indicate adjustments in Intel's site selection strategy emphasizing costs relative to qualitative factors.

### Building Advantage

In a constant effort to sustain and grow its investment, Intel Costa Rica has looked for ways to better position itself within Intel International. By staying competitive, Intel management ensures the operation grows deeper roots, making the investment more sustainable in the long term. As a result, Intel Costa Rica is now focusing on activities of higher value and complexity, to help mitigate the fact that its operation has higher labor costs than those of its Asian counterparts. This explains the more recent incursion into services for export by Intel Costa Rica.

In spite of its competitive challenges, Costa Rica is considered to have real potential to move up the value chain. The country has unique advantages: good market/customer proximity, strategic shipping logistics via Atlantic or Pacific, an

increasing number of flights, and design support and customization that could help differentiate its location relative to standard high-volume, low-cost operations in Asia. For instance, Costa Rica could become a site for “forward staging” of inventory, which now takes place in Mexico, Los Angeles and Miami.

In addition, CAFTA, the free trade agreement negotiated between the United States and the Central American nations, is a positive development for Costa Rica.<sup>22</sup> CAFTA secures trade access over the long term to the United States, and is expected to lessen the uncertainty for investors moving goods under the Caribbean Basin Initiative, a unilateral concession by the United States.

### Country Competitiveness Factors

Costa Rica has learned that keeping investors satisfied after they are established requires continual attention to improving investment conditions, but repays greatly with a reinvestment rate in Costa Rica amounting to about 50% of total flows. According to Dueñas, competitiveness is not static, but “a moving target every day of your life.” Intel and other MNCs have shared with officials in Costa Rica their benchmarked costs and conditions of top locations under consideration around the world, signaling the investment climate factors in Costa Rica that need attention. These benchmarks present a live, dynamic SWOT (strengths/weaknesses/opportunities/threats) analysis, against which Costa Rica can continually improve its climate at an accelerated pace.

Several pressing issues illustrate the types of factors that may affect Costa Rica as it competes for FDI in the near future. While specific to Costa Rica’s situation, these examples are relevant for locations worldwide, because they are largely driven by measures of global competitiveness. These include: (1) the corporate tax rate; (2) labor flexibility; (3) advanced telecommunications; and (4) advanced engineering education.

- **Corporate tax rate.** The World Trade Organization (WTO) mandates that all export-oriented incentives be eliminated by 2009.<sup>23</sup> Costa Rican free zone incentives grant exporters 100% corporate tax exemption for a number of years. When eliminated, investors under the regime would go from paying zero or 15% corporate tax to the current rate of 30%, a significant disincentive. Even a 15% tax rate may not be considered enough to entice established investors to stay or expand.
- **Labor flexibility.** Current labor law sets an eight-hour work day, which may generate overtime, making it more expensive for companies to operate in Costa Rica. Following the successful model under which it operates in other countries, Intel has proposed four 12-hour days to better adjust to certain industrial activities and reach higher competitiveness levels in Costa Rica. A modification to the labor law has been proposed that allows companies to hire workers on different schedules, as long as the workweek remains at 48 hours. Several apparel operations in Costa Rica also have requested this sort of flexibility.
- **Advanced telecommunications.** It has been suggested that investors in Costa Rica would benefit from higher quality, yet lower cost telecommunications. For example, every piece of operations equipment in Intel’s plant is connected

via the Internet to transmit operational data in real time to other Intel plants around the world. In order to increase their competitiveness, a rapidly growing number of foreign and domestic investors in all sectors require greater capacity and speed in data, voice and video transmission, at lower costs.

- **Advanced engineering education.** The educational standards initially put in place by Costa Rica to accommodate Intel may need upgrading as investors move into higher-value added products. The introduction of Intel Costa Rica's Latin America Engineering Services underscores this priority; the group now requires employees with Master's and PhD degrees in engineering. Bachelor's degree or "licenciatura"<sup>24</sup> may no longer be sufficient for more sophisticated engineering and research and development functions.

## LESSONS

While Intel in Costa Rica was a large, high-profile project, the lessons from the experience are nevertheless widely applicable in the practice of investment promotion, especially within the context of a developing cluster. (*See also Appendix 3: Summary Recommendations.*)

**Leverage the strategic project as a "flagship" investment.** One strategic investment project can make a huge difference in solidifying a location's competitive position. In the case of Intel in Costa Rica, the direct economic impact, multiplier effects and investment climate enhancements have served as points of leverage for the location to win more FDI. These impacts were both inherent in the project itself, and the result of subsequent efforts by Costa Rica to create a larger opportunity. However, while one good project can be used as a point of leverage, it is not an end in itself. Costa Rica's experience with Intel suggests that the targeted approach directed at landing the initial investment is equally critical after the fact to fully leverage the opportunity the investment presents. Once the investment is made, but especially in the case of a large, highly visible initiative such as Intel, it represents only the start of an ongoing process to maintain competitiveness that requires a national priority and strategy at the highest levels of government. In a way, this becomes a continuous cycle if the IPA and its country take appropriate steps to fully leverage the opportunity.

**Stay abreast of investor requirements and continually adapt the investment climate.** Given the dynamic nature of the competitive environment and external market conditions, leveraging the opportunity over a sustained period becomes a moving target. Beyond the original assembly and test project, Intel's reinvestment was important in its subsequent addition of sophisticated engineering services, software development, financial services, procurement, technical assistance and venture capital investment. The project, however, has not reached its full potential, nor has the cluster, or "ecosystem," fully developed. Intel Costa Rica now faces increasing pressures to lower costs, and is aiming toward higher-value added activity within Intel International. To stay current with investor requirements, any location's investment climate must be continuously reevaluated and adapted.

**Coordinate support among existing investors and the highest levels of government.** Costa Rica's approach in working with Intel offers a model for close and productive coordination with investors throughout the stages of the investment. The government listened to Intel and other investors and acted upon their issues. It established an institutional framework during the process of persuading and establishing Intel in 1996 through 2000 that proved successful in achieving

impressive results. This framework included mechanisms such as the multifunctional Steering Committee, as well as a national focus on FDI personified by the high-level involvement of the President and other top government officials in FDI issues, strategy and promotion. However, the national focus on FDI, the “fast track” attitude used to close the Intel deal, the Steering Committee and the committee for high-technology companies were not established as permanent institutions able to survive over time, regardless of changes in leadership and government priorities.

**Develop a strategy to establish service and supply networks for priority sectors.**

Intel in Costa Rica exemplifies the importance of cultivating the support industry to help anchor pioneer investors in the growing cluster. Several approaches to building a vibrant supplier network were employed in Costa Rica, but most started with understanding more about existing investors. Intel required several of its suppliers to locate in Costa Rica, and CINDE first worked to attract more large producers like Intel. The agency discovered that suppliers often needed more than one locally based client to warrant setting up shop in Costa Rica. CINDE later determined it was necessary to work with existing investors to “back link” potential suppliers of products and services that would transcend sectors. Through this sort of investigative research, commonalities were identified between medical devices and electronics, for instance, in their procurement of clean room services, plastics and metal mechanics. Thus, the development of the electronics cluster also helped to feed the medical devices cluster, and vice versa, providing strategic and escalating leverage of the initial Intel investment.

## QUESTIONS FOR DISCUSSION

1. What were the major direct and indirect impacts of Intel's investment in Costa Rica, and which do you think were most important in attracting further investment? Which do you estimate were the most important for the country's economic development long term?
2. What aspects of Costa Rica's investment climate required improvements in order for Intel to finalize the deal? Why were these important to Intel and its business strategy?
3. How did the Costa Rican government and CINDE leverage the investment after Intel's initial decision to invest was made? In retrospect, what were the most important areas of activity in sustaining the Intel momentum? In your opinion, are there actions not taken by the government and/or CINDE that would have further leveraged this momentum?
4. Discuss the roles of the "signaling effect," the "halo effect" and other multipliers in leveraging the opportunity an important FDI project presents. Give hypothetical examples of how these effects can be channeled to support strategic FDI targets.
5. Given Costa Rica's experience, what specific actions can be taken to help ensure a favorable word-of-mouth reference from existing investors? How should the environment of investor references and support be structured and audited/monitored, and by whom?
6. How did Intel impact the development of the technology cluster in Costa Rica? Discuss the challenges that CINDE faced and various approaches to attracting both large producers and suppliers to a target cluster.

## Endnotes

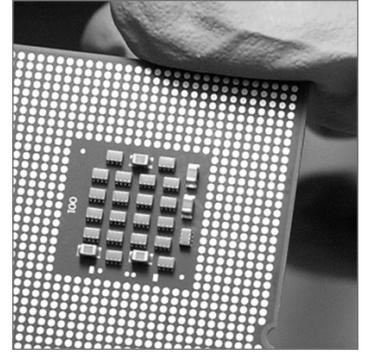
- <sup>1</sup> CINDE is short for la Coalición Costarricense de Iniciativas de Desarrollo.
- <sup>2</sup> The two plants encompassed 37,200 square meters in new construction, or approximately 400,000 square feet.
- <sup>3</sup> Intel's full A&T configuration in Costa Rica was initially planned to accommodate four plants and 3,500 employees.
- <sup>4</sup> Chipsets are electronic components used to support an increase in the performance of the microprocessor in desktops, with routing, audio/video, graphics, communications, and wireless functions.
- <sup>5</sup> CINDE was resourceful in generating publicity. *The Wall Street Journal* published a lengthy article, "Costa Rica's Sales Pitch Lures High-Tech Giants like Intel and Microsoft," featuring President Figueres. Other publications carried the story of Costa Rica as a location for high-tech investment, including *Newsweek*, *Industry Week*, *The Journal of Commerce*, *Export Today*, *World Trade*, *Global Finance*, *The Inside Line*, *Continental* magazine, *Investor's Business Daily* and Silicon Valley's *San Jose Mercury News*. CINDE and the Intel investment were featured in international development publications, such as the *World Investment Report* of the United Nations Conference on Trade and Development (UNCTAD) and case studies from FIAS/World Bank/Harvard and Thunderbird American Graduate School of International Management.
- <sup>6</sup> Roberto Artavia, Dean of INCAE, has said that Intel initiated a positive model for the relationship between a MNC and the press in Costa Rica.
- <sup>7</sup> Bob Perlman, Vice President of Finance and Director Tax, Customs and Licensing at Intel, as stated in "Attracting High Technology Investment: Intel's Costa Rican Plant" by Debora Spar, Foreign Investment Advisory Service, International Finance Corporation/ World Bank Group, 1998.
- <sup>8</sup> Intel exports were US\$1.03 billion in 2004 and US\$1.34 billion in 2005.
- <sup>9</sup> Estimates used are by Adrián Brenes, in his article, "What the Intel effect is all about," *Actualidad Económica* magazine, 2001.
- <sup>10</sup> Intel uses a range of services in the operation of its Costa Rica campus, including security, logistics, food service, etc.
- <sup>11</sup> In *Actualidad Económica*, Intel's local purchases in 1999 were estimated at about US\$150 million, not including energy and telecommunications bills paid to ICE.
- <sup>12</sup> Other companies located in Belen County in electronics include: Teradyne, Bourns/Trimpot, Remec, Sawtek, and Merrimac; in medical devices: Hospira (previously Abbott), Boston Scientific, McGhan and Coloplast; and in call centers: Sykes, Supra, Seton, Language Line and others.
- <sup>13</sup> For more details on the investment climate adaptations made by Costa Rica, see the occasional paper, "Attracting High Technology Investment: Intel's Costa Rican Plant" by Debora Spar, Foreign Investment Advisory Service, International Finance Corporation/World Bank Group, 1998.
- <sup>14</sup> The enhancements applied equally to foreign and domestic companies. Costa Rica's Constitution explicitly provides for fair treatment of all individuals, regardless of origin, nationality, race, religion, etc.
- <sup>15</sup> As reported by the Costa Rican Chamber of Construction.
- <sup>16</sup> As reported by the Central Bank of Costa Rica.
- <sup>17</sup> These included Photocircuits, NTK, Tiros, RVSI, DEK and Pycon, among others.

- <sup>18</sup> Intel received public recognition and numerous awards in the area of social responsibility, including the AmCham Environmental Award in 2001 and 2002, the AmCham Grand Prize for Community Service in 2003 and 2005, and the Chamber of Commerce Award for Corporate Social Responsibility in 2005.
- <sup>19</sup> These institutions include CINDE, Ministry of Foreign Trade (COMEX), Ministry of Science and Technology (MICIT), the National Training Institute (INA) and the Technological Institute (ITCR).
- <sup>20</sup> As cited by Andrés Rodríguez-Clare in “Costa Rica’s Development Strategy based on Human Capital and Technology: How it got there, the impact of Intel, and lessons for other countries;” written for the *Human Development Report 2001*, UNDP, February 2001.
- <sup>21</sup> Early on, Intel had advised Costa Rica to move more quickly in the area of Internet services. At the time, Internet services were exclusively under RACSA, a wholly owned subsidiary of ICE, the government provider of telecommunications services. The government decided to elevate the importance of Costa Rica’s Internet offering, in order to provide more bandwidth and speed.
- <sup>22</sup> Central American Free Trade Agreement; since the Dominican Republic joined later, the Agreement is now called CAFTA-DR.
- <sup>23</sup> Agreement on Subsidies and Countervailing Measures, agreed by WTO members at the Doha Ministerial Conference. There is an automatic two-year extension after 2007, which can be lengthened upon request by qualifying WTO members.
- <sup>24</sup> This is a five to six-year university degree, beyond Bachelor’s level, but below Master’s degree.



# Appendices

1. ACRONYMS AND ABBREVIATIONS
2. THE DECISION TO INVEST: A SYNOPSIS OF “ATTRACTING HIGH TECHNOLOGY INVESTMENT – INTEL’S COSTA RICAN PLANT” CASE STUDY
3. SUMMARY RECOMMENDATIONS
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## APPENDIX 1 ACRONYMS AND ABBREVIATIONS

*This appendix includes further explanation of abbreviations used in this publication, including full names in Spanish where appropriate. In some cases, a short description of the meaning is given rather than an exact translation.*

A&T	assembly and test
ATP	assembly and test plant
CAFTA	Central American Free Trade Agreement
CAFTA-DR	Central American Free Trade Agreement after the Dominican Republic joined
CENAT	Centro Nacional de Alta Tecnología, National Center of High Technology
CINDE	Coalición Costarricense de Iniciativas de Desarrollo, the Costa Rican Investment Board; Costa Rica's IPA
COMEX	Ministry of External Commerce or Foreign Trade
CPU	central processing unit, the brains of the computer
FDI	foreign direct investment
GDP	gross domestic product
GNP	gross national product
ICE	Instituto Costarricense de Electricidad, the state-owned power and telecommunications authority in Costa Rica
ICT	Instituto Costarricense de Turismo, the Costa Rica Tourism Board
INA	Instituto Nacional de Aprendizaje, the National Training Institute
INCAE	International university based in Costa Rica offering MBA programs
INS	Instituto Nacional de Seguros, the National Insurance Institute
IT	information technology
ITCR	Instituto Tecnológico de Costa Rica, the Technological Institute of Costa Rica
LAES	Intel's Latin America Engineering Services
LIU	Local Industry Upgrade program
MICIT	Ministry of Science and Technology
MIL	Costa Rican Local Industry Upgrade program
MNC	multinational corporation
P&G	Procter & Gamble
PROCOMER	Promotora del Comercio Exterior, the export promotion agency of Costa Rica since 1996
CR PROVEE	Costa Rican entity to develop local suppliers to foreign investors established in Costa Rica
RACSA	State-owned telecommunications company responsible for higher-value technology telecommunication services, such as faxing, Internet, international dedicated leased lines; a 100% subsidiary of ICE
UCR	University of Costa Rica
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

## APPENDIX 2

### THE DECISION TO INVEST: A SYNOPSIS OF “ATTRACTING HIGH TECHNOLOGY INVESTMENT – INTEL’S COSTA RICAN PLANT” CASE STUDY

*This appendix is a synopsis of “Attracting High Technology Investment: Intel’s Costa Rican Plant” by Debora Spar, a paper published in 1998 by the Foreign Investment Advisory Service (FIAS) of the International Finance Corporation/World Bank Group. Many of the lessons concluded in the FIAS case study remain highly relevant in today’s practice of investment promotion. As the basis for an ongoing case history, it provides critical context for MIGA’s discussion of the Intel investment’s impacts over time. Information about Costa Rica and Intel contained in this synopsis is historical, and therefore may not be representative of the current situation. (The original paper in its entirety may be ordered at <http://publications.worldbank.org/ecommerce>.)*

#### **Background**

The 1996 announcement by Intel, the world’s leader in the semiconductor industry, that it would construct a new US\$300 million semiconductor assembly and test plant (ATP) in Costa Rica aroused considerable interest in the foreign investor community. Intel’s annual revenues were over US\$20 billion at that time, representing three times the entire gross national product (GNP) of Costa Rica, whose population was only 3.5 million. The construction budget for the facility dwarfed by a factor of six times the total annual foreign direct investment in Costa Rica. The plant’s exports were expected to double the nation’s exports by the year 2000.

After introducing the world’s first silicon microprocessor chip in 1971, Intel possessed an 85% share of the global microprocessor market by 1996. Intel was also three times more profitable than the semiconductor industry average, as measured by return on capital. The heart of Intel’s strategy relied on using its technological leadership to continually improve the performance of its microprocessors, and as market leader, to extract the highest profit margins from new technology advances before the product would eventually become commoditized and subject to price competition. Intel’s founder, Gordon Moore, coined the now-famous “Moore’s Law,” which stated that the processing power of computer chips can (and should) double every 18 months. Intel set the pace in the industry by introducing more powerful chips, reaping profits in the early months after releasing the innovation in the marketplace, and moving in rapid succession to continually improve its products. In recent years, Intel also encouraged demand for new, more powerful chips among other companies, such as Microsoft. This basic cycle of product and technology leadership resulted in a constant need to innovate, and to ramp-up ever-increasing production capacity as quickly as possible.

Locating Intel’s semiconductor ATPs globally was not driven by the need to be close to local markets. Transportation costs were low – a minute percentage of final costs – for the lightweight but high-value technology product. Instead, investment abroad was driven by the desire to build large amounts of incremental assembly and test capacity as quickly and as cost effectively as possible. To reduce the facility portfolio risk, Intel produced at several different plants worldwide so that no more than 30% of its revenues from any product category would come from any one facility or geographical region.

Within Intel's competitive environment, speed and continual product improvement were the critical factors driving its decisions to expand and upgrade its production capabilities. In contrast to Intel's relatively more capital intensive initial fabrication plant (fab) facilities where the silicon chips are created, Intel's decision on locating new ATP capacity, where the two-step chip process is completed, was driven slightly more by assured access to a highly trainable and technical, yet low-cost, workforce. The workforce could participate in successive revamping and upgrading of the ATP as the marketplace dictated new performance requirements every 18 months. Intel's location selection apparently was influenced also by government incentives, in some measure because its investment decisions were made even before specific product demand levels could be forecasted with confidence. Firm-specific concessions and financial incentives were somewhat more important in locating the capital-intensive fab plants than for ATPs. In contrast, ATP location decisions relied relatively more on workforce and human resource-related considerations, such as availability of qualified engineers and employee turnover.

### **Intel's Interactive Site Selection Process**

Intel engaged in an ongoing process of continually evaluating possible fab and ATP sites among its investment alternatives. The company maintained a fluid list of possible host countries for new ATPs, which was actively updated and revised as competitive circumstances and Intel's perceptions of its needs changed. In early 1996, executive management specifically decided to pursue a site for a new ATP, requiring 400,000 square feet and employing an initial workforce of 2,000 to assemble and test the new line of Pentium® microprocessors. Intel convened a team of experts composed primarily of people who had significant experience in site selection, including the Vice President for Site Selection, as well as other senior executives and staff from several functional areas within the company.

For nearly two years prior to this decision to select a new ATP site, Costa Rica's national promotion agency had been targeting and actively approaching large, U.S.-based electronics companies. In the late 1980s, CINDE (la Coalición Costarricense de Iniciativas para el Desarrollo) specifically decided to focus its efforts rather than to spread its limited resources. Given Costa Rica's high-level technical knowledge and yet relatively low labor costs, as well as an abundance of bilingual citizens, CINDE decided Costa Rica might be well suited to the needs of the growing global electronics industry. In 1993, CINDE began courting Intel. The last meeting together was held a few months before the location search for a new ATP was formalized. However, by that time CINDE had already increased its focus on Intel, establishing a project team of three senior-most CINDE officials, each focused exclusively on attracting Intel through discrete functional area assignments, such as legal regulation, free trade zone issues, human resources, education, real estate, and so forth.

The first stage of Intel's formal process began when Intel team members validated first-level considerations using basic desk research to eliminate candidates from the long list of countries. In addition to Costa Rica, at this point the list included: Argentina, Brazil, Chile, China, India, Indonesia, Korea, Mexico, Puerto Rico, Singapore, Taiwan (province of China) and Thailand. While not formally ranked, the various criteria weighed at this first stage included generally the following considerations:

- **Stable Economic and Political Conditions** – Including positive economic conditions, an established and reliable political system, and a relatively transparent operating and legal environment.
- **Human Resources** – A sufficient supply of professional and technical expertise in a non-union work environment.
- **Reasonable Overall Cost Structure** – Recurring cost considerations such as labor rates, taxation, tariffs, customs fees, and capital repatriation.
- **A “Pro-Business” Environment** – Government interested in assisting in economic development and foreign investment, including observable signs of economic liberalization.
- **Logistics and Manufacturing Lead Times** – Ability to physically move product with efficiency, from the plant to an international point of departure, and then through customs and export procedures.
- **“Fast Track” Permit Process** – Permits necessary within a tight time schedule of four to six months.

Using these important but rough criteria, the Intel team cut its original list of 12 candidate countries down to seven: Argentina, Brazil, Chile, Costa Rica, Indonesia, Mexico and Thailand. Then the decision was made to regionally diversify into Latin America. The four remaining candidates were apparently Brazil, Chile, Costa Rica and Mexico.

The second stage of Intel’s process began quickly thereafter, in the spring of 1996, with on-site visits designed to glean an “insider’s perspective,” including local meetings with government officials, and local consulting, accounting and law firms on matters such as reliability and transparency of the Costa Rican legal and financial systems. In addition, in-depth analysis was conducted in areas of critical importance to Intel, such as local infrastructure, including the opinions and past experiences of other foreign investors. Also at this critical early stage, Costa Rica’s Minister for Foreign Trade, José Rossi, and President José María Figueres were actively involved and clearly supportive. Importantly at this stage, the Minister took up the specific role as the central point of coordination for Intel within the Costa Rican government.

The third stage was a highly interactive process, during which a variety of Intel executives visited Costa Rica weekly to address different concerns. CINDE served as the lead agency on each visit, with general issues raised in prior analysis and visits now requiring specific resolution and clarification. One of Intel’s top issues regarding Costa Rica related to the country’s relatively small size and the impact Intel could have upon the overall physical infrastructure, including airport cargo handling and Intel’s planned consumption of two key Costa Rican resources – energy and water. A second area of critical importance was the education system, which would need various targeted improvements to meet technical skill requirements and capacity, as well as the levels of English proficiency desired by Intel. These requirements were matched with great specificity to Intel’s needs, making the government’s programmatic concession to several improvements perhaps the most interesting element of the deal. A final concern was a series of financial considerations, including the overall operating cost structure net of taxes, and other standard incentives. While Costa Rica offered a standard set of free trade zone exemptions, it did not offer any other special government grants to Intel alone.

The fourth and final stage of the process began with Intel’s announcement of Costa Rica’s selection in November 1996, the same year in which the site selection process began. Mexico reportedly had been the frontrunner, but was eliminated

due to concerns over its recent currency crisis and mandatory union system. During this quickly executed but deliberate final stage, the company and the Costa Rican government negotiated and concluded a formal contract, including the award of various permits and trade zone authorizations, and finalized the government's commitment on technical training issues. Within five months of the announcement date, construction of the new ATP began.

### **Critical Success Factors**

Although several other countries also sought Intel's attention, Costa Rica nevertheless was able to win the competition. The factors that contributed to Costa Rica's success can be summarized along three dimensions: (1) country factors, (2) negotiating tactics, and (3) specific concessions.

### **Country Factors**

Many of the country-specific considerations that Intel favored in Costa Rica were the result of broad political decisions and economic strategies with a long history of implementation, such as the existing, stable political and legal systems and the country's economic agenda. However, at a basic level, Intel also felt comfortable with the sense of long-term stability and the ability of the government to articulate a receptive climate for foreign investors:

- **Political and Social Stability** – As a full democracy since 1948, Costa Rica had a peaceful history and open, accessible government. The government in turn was trusted by the populace and had a well-accepted mandate to boost economic growth. Property rights and rule of law were firmly in place.
- **Economic Openness and Liberalization** – Most economic activity traditionally was concentrated in the agricultural sector until 1982 when debt load, as in much of Latin America, forced changes in policy. After that time, Costa Rica had moved dramatically away from policies of import substitution to an aggressive program of economic liberalization. In particular, the government moved to privatize a number of state enterprises, opened the capital account, lifted restrictions on capital repatriation, and made the Costa Rican currency convertible. It also participated in both regional and global trade agreements. Costa Rica also embraced and took specific actions to attract and sustain foreign investment, including standard free trade zone policies and infrastructure improvements. Foreign ownership is largely accepted and treated on an equal property-right basis. Intel could observe first-hand a history of an open economy with strong trading relationships in the international marketplace, characterized by largely unconstrained product and capital flows.
- **Focused Development in the Electronics Sector** – After Costa Rica's relatively higher wage levels undercut its focused efforts in the apparel industry, the government revised its industry priorities, relying on the country's well-educated workforce as a key differentiator. This decision helped focus a strategy on attracting investment among medium- and high-technology foreign firms, particularly in electronics. While this was not a new approach among developing countries, Costa Rica also took steps to invest in education and technical training, affording it a low-wage but well-educated labor pool. By investing approximately 5% of GDP in education, with an

active bilingual curriculum (English as a second language), Costa Rica was first able to attract smaller investments in electronics manufacturing. This groundwork paved the way for Intel's consideration of Costa Rica.

- **Receptive Investment Environment** – Costa Rica's consistent receptivity to, and working relationship with, foreign investors resulted in subsequent enthusiastic recommendations to Intel from multinational firms already operating in the country. CINDE was able to use these powerful references to complement the story Intel heard from the government.

### ***Negotiating Tactics***

While the factors already described were in large measure already in place in Costa Rica, negotiating tactics and specific concessions nevertheless were critical to the final outcome:

- **Unified Response** – Costa Rica used its small size as a competitive advantage, focusing attention on the project within a close-knit community of government, media and business. This created an impression of a unified and cooperative government team operating within Costa Rica. CINDE's autonomous, non-profit organizational structure enabled it to bridge both the government and business spheres, making it an effective intermediary for the prospective investor. CINDE was empowered to assemble responses to complex issues Intel was researching and to help educate the government about Intel's requirements, conveying a tone of openness and responsiveness that Intel was known to appreciate during the site selection process.
- **Extensive Personal Involvement from the Top** – It is well known that the President of Costa Rica chose to take an active, personal role in the process, insisting that the government provide a clear, consistent message to Intel. President Figueres assigned the Minister of Foreign Trade to coordinate the government's response among various agencies, a role that became critical as negotiations intensified. Throughout the process, President Figueres spoke nearly every week with Minister Rossi and Enrique Egloff of CINDE to help target his intervention, urging other ministers to expedite matters critical to the project. He frequently met, formally and informally, with Intel executives visiting Costa Rica. The President, the Minister and the CINDE executive visited Intel facilities in the United States.
- **Speed** – Intel's industry is characterized by the need for speed in adapting to repeatedly short product life cycles. Costa Rica demonstrated first-hand that the government could be responsive throughout the entire site selection process, even on complex issues such as addressing educational improvements.
- **Refusal to Engage in "Extraordinary" Measures** – The government apparently did not make extra-legal arrangements, nor did it offer dramatic giveaways or kickbacks, nor did Intel request any. Although the Costa Ricans were willing to modify laws, policies and procedures to accommodate Intel, these were designed to apply to all foreign investors in Costa Rica. This furthered the country's reputation of transparency among foreign investors.

- **Opinion Management** – The unwillingness to grant Intel special treatment also allowed the government to sell the project domestically. CINDE coordinated meetings with the opposing political party, as well as with environmental groups.

### ***Specific Concessions***

Specific concessions were essential to win the Intel investment. As late as September 1996, Intel still viewed the country's physical and educational infrastructure as inadequate. In addition, the financial terms proposed by the government were less favorable than those offered by other nations. Costa Rica addressed each of these issues:

- **Financial Incentives** – While the government's free trade zone incentives were well known, attractive, and accessible to all foreign investors, the government additionally agreed not to levy a 1% tax (which had temporarily lapsed) on the assets of companies operating in free trade zones.
- **Infrastructure** – The government addressed fundamental concerns about the inability of the international airport to support numerous air cargo shipments by granting more licenses to foreign air carriers. Existing plans were accelerated for a new air cargo terminal. Road improvements were accommodated through contributions from both sides. Energy issues were more troubling, since required electric distribution improvements had to be made by the state-owned utility. The utility agreed to move quickly, and also received funding from Intel for new substations in exchange for more favorable pricing for large, industrial users like Intel under a newly developed two-tier rate structure.
- **Education** – Intel's primary concern was in achieving a labor pool sufficient in size and skills to support the company's needs. Although the educational level in Costa Rica was already significantly above the norm for developing nations, the country lacked a sufficient infrastructure to meet all of Intel's human resource requirements. The government responded by analyzing Costa Rica's high school and training program curricula against Intel's detailed personnel requirements. An extensive list of recommendations was made to, and approved by, the Ministry of Education to implement immediately new certificate programs and degrees, as well as to boost language programs in both Spanish (for expatriates) and English for Costa Ricans.

### **Lessons**

Although Intel's selection of Costa Rica was a highly specific event, and Costa Rica has a unique profile as a small, stable nation, there are nevertheless several conclusions that can be drawn from this case:

#### ***1. Effective Investment Promotion Strategy and Execution***

- CINDE managed the process as a unique case with particular needs, interests, and constraints on the part of the prospective investor.
- Costa Rica focused on an investment promotion strategy that matched its existing competitive strengths.
- CINDE approached Intel specifically because the company's investment patterns and needs largely matched both Costa Rica's existing country profile

and its reasonable next step up in national potential, especially in infrastructure and education.

- CINDE continued to learn about the prospective investor by conducting its own research all the while Intel was performing due diligence, enabling both sides to better interact and eventually negotiate with each other based on a substantive appreciation of one another's objectives.

## **2. *National Characteristics Inviting to Investors***

- Costa Rica possessed the basic characteristics necessary to convince Intel to invest, including but not limited to a stable democracy, an established commitment to economic openness and progress, and a fully transparent legal system.
- The government demonstrated a helpful and facilitating approach to foreign investors, free from corruption.

## **3. *Effective Governmental Skills***

- The government was consistently responsive, well prepared, and clear in its communications.
- The government at all levels approached the proposition in a cooperative manner, not from an adversarial point of view.
- CINDE was empowered to coordinate and capable in doing so, yet was independent of the formal governmental structure, making it a more effective intermediary.

## **4. *Costa Rica's Positive Perception within the Investor Community***

- In addition to overcoming the hurdle of the initial desktop research phase, Costa Rica also survived the initial cut of competitor countries due to a positive, word-of-mouth reputation it already possessed among existing investors.
- Costa Rica had a proven track record of success attracting and supporting foreign investors, which is an important driver for further investments.
- Marketing is important to raise awareness of a country's potential. Objective publicity can be very helpful in covering a country's successes such as an economic boom or innovative training program, but is also harmful in reporting political strife, corruption, or instability. Efforts to land the first multinational are likely critical to longer-term success because investors often follow the leader.

## **5. *Concessions Need Not Be Firm-Specific***

- Costa Rica granted no special favors unique to Intel. Concessions made were not unreasonable or capricious. Rather, infrastructure adjustments – at the airport, the schools, and the free trade zones – benefited all investors and were generally good for Costa Rica's economy and its longer-term development goals.

## APPENDIX 3

### SUMMARY RECOMMENDATIONS

*This appendix, designed for developing country IPAs and their government policymakers, extracts key lessons from the Intel case history and applies them to a framework for developing an effective location product and investor services to attract FDI.*

#### **For Developing Countries:**

1. Make FDI attraction a national priority, design a long term national strategy, transmit the vision with determination and execute consistently and in a sustained manner, independent of government changes in command.
2. Be aware that competitiveness is a moving target, and that the country's operating conditions and investment climate have to be in constant improvement ahead of the target investors. Instead of granting specific concessions to a given company, adopt policies and implement reforms that are of general applicability for all national and foreign investors.
3. Involve the business community in the policymaking dialogue to help attract more FDI. Create systematic mechanisms for listening carefully to investors and channeling their concerns.
4. Monitor and update the country's benchmarking with the help of established investors to inform and enhance promotional efforts.
5. Learn in depth about each ideal "ecosystem," i.e., the fully integrated and symbiotic investor-supplier cluster for each sector, and how to develop it well for investors to come and prosper in the host country.
6. Invest with a long-term vision in education at all levels and infrastructure related to the needs of established and target investors, and to the evolution curve of the host country. To move up the value chain, a host country must strengthen its higher education, IT infrastructure and logistics.
7. Work to reduce policy uncertainty, an important deterrent to FDI.

#### **For IPAs of Developing Countries:**

8. Establish a long term FDI attraction strategy guided by investor benchmarking and SWOT analyses to determine a few realistic target sectors. These may well be in industries other than technology. Concentrate on those targets.
9. Research target industries and companies. Look for and learn about those companies that represent the large, signature investors in each sector – those that would help catapult the country in the particular sector. Prepare a strong and precise case and go after those with determination.
10. Have a realistic, balanced and transparent message about the operating conditions. Do not over-promise, so that the investors that settle do not experience unpleasant surprises, and effectively grow to impact the country in many ways for the long term.
11. Widely spread the good news of "anchor" investments establishing in the country, by generating publicity both nationally and abroad. Utilize testimonials with live investors in promotion events to add credibility to the country's message.
12. Guide and support the establishment of the investor, and provide aftercare services to keep investors satisfied. In addition, continue close contact with top management at the local operation, as well as with key management contacts

at headquarters to systematically explore any new opportunities the company could further expand in the country, including opportunities in sub-sectors unrelated to the initial investment. This investment on the part of the IPA and the country gives great returns in the form of re-investment. It is easier and less costly to grow an already established company than to attract a new one. As part of this, the IPA must be involved in policy advocacy in support of significant advancements to improve the host country's investment climate.

## APPENDIX 4 INTEL IN SICHUAN PROVINCE, CHINA

*Intel recently set up operations in Chengdu, China. The following information about this project and Intel's motivations was compiled from public announcements and related sources.*

In late 2003, the Intel Corporation announced it would invest up to US\$375 million to construct a semiconductor assembly and test plant (ATP) – its seventh – in Chengdu, China. A recently announced second plant to handle the most advanced microprocessors is expected to open in 2007, bringing the total Intel investment in Sichuan up to US\$450 million. The Sichuan-based facility is Intel's second ATP in China; one is already in place in Shanghai on the east coast.

The ATP in Sichuan assembles chipsets using Intel's most advanced packaging technology. The 800,000 square foot Chengdu facility was initially expected to employ 675, and to create perhaps as many as 3,000 jobs in the region. The site is 4.5 km from downtown, near the Shuangliu International Airport in Chengdu's High-Tech Industrial Development Zone.

Chengdu has a population of 10.6 million and is the capital of China's south-western Sichuan province. Intel is not the first semiconductor company to invest in a Sichuan plant. Other companies are being drawn away from China's east coast and Beijing westward to the interior of the country, including Sichuan, taking advantage of significantly lower wage rates.

The decision to locate another ATP in China was apparently influenced by increasing demand in Asia and the expected potential of the Chinese market. It also has been suggested that there is great perceived value in establishing an early, local presence in a region the Chinese government has targeted for economic development and increased FDI. Executives at Intel have said that the company was attracted to Chengdu by its unique strategic position, outstanding educational system and the availability and proficiency of its workers. In addition, it has been reported that Chengdu is considered competitively strong on a global basis in the following areas:

- Number and quality of universities, labs and technical institutes;
- Infrastructure for electronics, including technology parks;
- Cost structure – competitive and sustainable;
- Low-cost labor;
- Government policy, including “Go West” incentives to encourage foreign investment in the interior of the country such as preferential taxes and infrastructure assistance.

## APPENDIX 5 SOURCES OF INFORMATION

*Web sources are followed by a list of articles and other published materials.*

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CINDE web page: [www.cinde.org](http://www.cinde.org)

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